FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

April 15 to April 21, 2012 (Week 16)

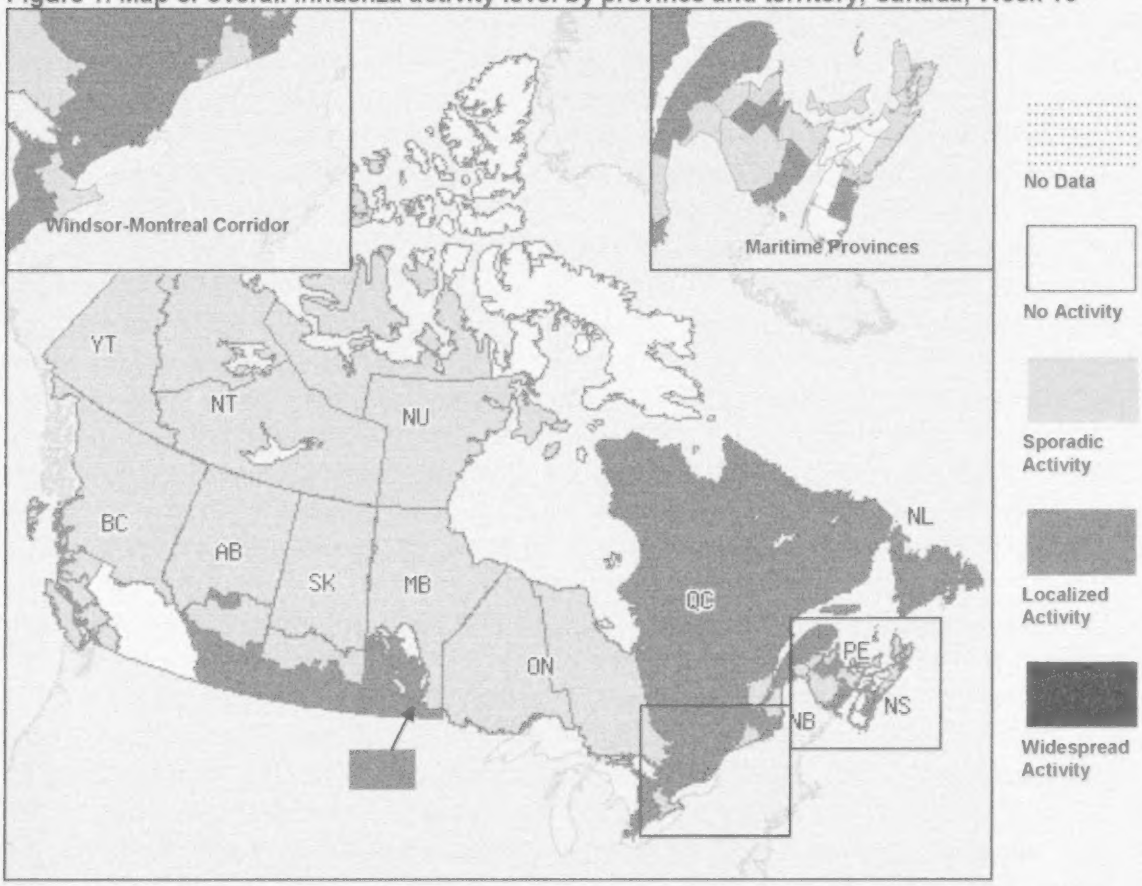
Overall Influenza Summary

- Although the peak of activity for the 2011-2012 influenza season in Canada has passed, several regions are still reporting elevated influenza activity (i.e. in the Atlantic Region, Quebec, Ontario, and the Prairies).
- Thirty-one outbreaks of influenza or ILI were reported this week (18 in LTCFs, 2 in schools and 11 others).
- In week 16, 731 laboratory detections of influenza were reported (14.1% - A(H3); 5.9% - A(H1N1)pdm09; 16.8% - unsubtyped and 63.2% influenza B). To date this season, influenza B remains the predominant virus type circulating in provinces east of Saskatchewan.
- 106 influenza-associated hospitalizations were reported this week (18 paediatric through IMPACT surveillance and 88 adult through aggregate surveillance)
- The ILI consultation rate declined compared to the previous week but remains within expected levels.

Influenza Activity (geographic spread) and Outbreaks

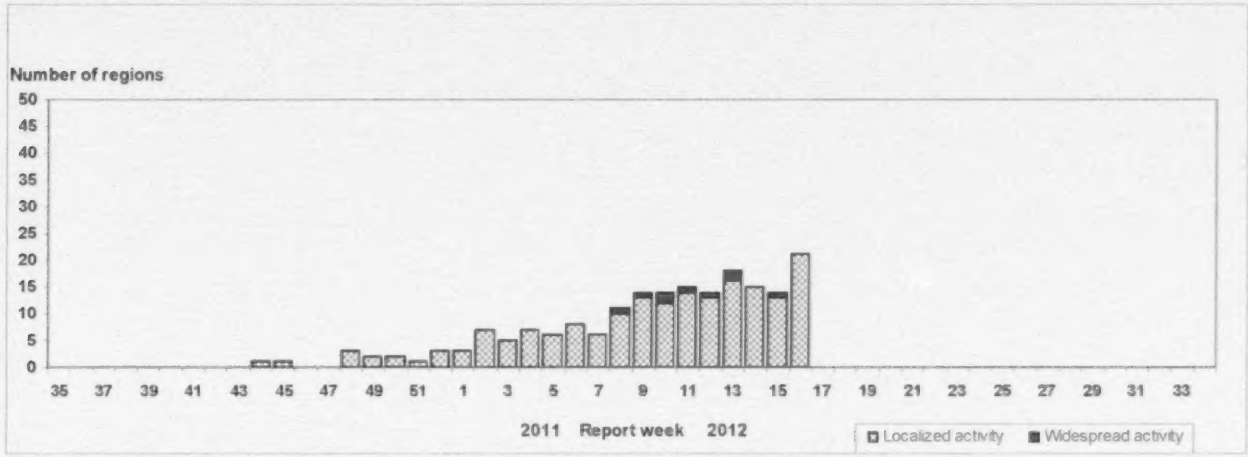
In week 16, 21 surveillance regions (within AB, SK, MB, ON, QC, NS, NB & NL) reported localized activity and 28 regions (within all provinces and territories except in NL) reported sporadic influenza activity (see Figure 1). Thirty-one outbreaks of influenza or ILI were reported this week: 18 in long-term care facilities (3 in AB, 1 in SK, 2 in MB, 5 in ON, 5 in QC, 1 in NS & 1 in NL), 2 in schools (in NB) and 11 others (3 in AB, 5 in ON & 3 in NL) (Figure 3).

Figure 1. Map of overall Influenza activity level by province and territory, Canada, Week 16



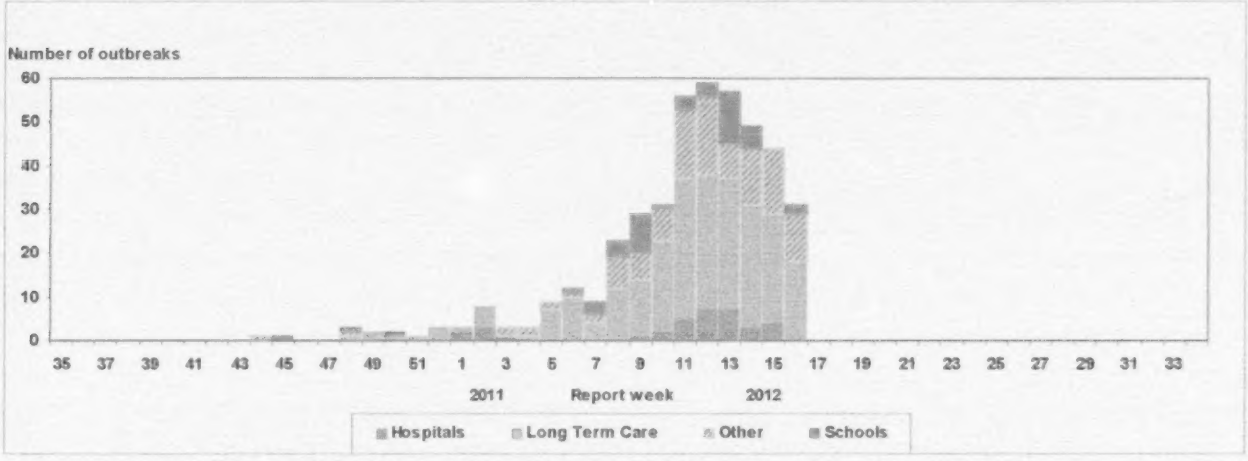
Note: Influenza activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates (see graphs and tables) and reported outbreaks. Please refer to detailed definitions on the last page. For areas where no data is reported, late reports from these provinces and territories will appear on the FluWatch website.

Figure 2. Number of influenza surveillance regions† reporting widespread or localized influenza activity, Canada, by report week, 2011-2012 (N=56)



† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.

Figure 3. Overall number of influenza outbreaks, Canada, by report week, 2011-2012



Influenza and Other Respiratory Virus Detections

The proportion of positive influenza tests continued to decline this week and was 17.4% (731/4,211) (Figure 4 & 5). The proportion of positive detections for both influenza A (6.4%) and influenza B (11.0%) declined compared to the previous week. To date this season, influenza B remains the predominant virus type circulating in provinces east of Saskatchewan.

Cumulative to date of influenza virus detections by type/subtype is as follows: 48.6% influenza A (40.7% - A(H3); 18.8% - A(H1N1)pdm09; 40.5% - unsubtyped) and 51.4% influenza B (Table 1).

Detailed information on age and type/subtype were received on 8,627 cases to date this season (Table 2). The proportions of cases by age group are as follows: 21.2% were < 5 years; 18.0% were between 5-19 years; 22.4% were between 20-44 years; 15.3% were between 45-64 years of age; 22.9% were >= 65 years; and 0.2% with age unknown. The largest proportion of influenza A cases were between 20-44 years of age (26%) and those >=65 years of age (24%). The largest proportion of influenza B cases were under 20 years of age (47%).

In week 16, the percentage positive for other respiratory viruses remained similar to the previous week : RSV-7.4%; parainfluenza-1.3%; adenovirus-1.9%; hMPV-3.7%; rhinovirus-8.9 %; and coronavirus-3.1% (Figure 5). For more details, see the weekly Respiratory Virus Detections in Canada Report.

Table 1. Weekly & Cumulative numbers of positive influenza specimens by Provincial Laboratories, Canada, 2011-2012

Reporting provinces	April 15 to April 21, 2012						Cumulative (August 28, 2011 to April 21, 2012)					
	Influenza A					B	Influenza A					B
	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total
BC	28	0	18	9	1	5	532	0	429	90	13	90
AB	92	0	63	12	17	22	1191	0	943	191	57	164
SK	17	0	8	2	7	9	494	0	311	47	136	62
MB	4	0	0	4	0	7	68	0	8	7	53	192
ON	25	0	5	10	10	158	870	0	218	470	182	2356
QC	82	0	7	0	75	190	1670	0	56	92	1522	1837
NB	6	0	0	5	1	57	62	0	17	26	19	240
NS	3	0	2	0	1	4	14	0	9	1	4	88
PE	0	0	0	0	0	7	3	0	2	1	0	38
NL	12	0	0	1	11	3	71	0	30	10	31	198
Canada	269	0	103	43	123	462	4975	0	2023	935	2017	5265

*Unsubtyped: The specimen was typed as influenza A, but no test for subtyping was performed. Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Note: Weekly data is based on week of positive lab detection. Cumulative data includes updates to previous weeks; due to reporting delays, the sum of weekly report totals do not add up to cumulative totals.

Table 2. Weekly & Cumulative numbers of positive influenza specimens by age groups reported through case-based laboratory reporting, Canada, 2011-2012*

Age groups	Weekly (April 15 to April 21, 2012)					Cumulative (Aug. 28, 2011 to April 21, 2012)				
	Influenza A				B	Influenza A				B
	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total
<5	31	5	10	16	46	894	193	318	383	934
5-19	16	0	5	11	38	518	74	261	183	1032
20-44	24	5	8	11	44	1170	253	430	487	765
45-64	26	6	7	13	40	792	164	268	360	529
65+	67	0	30	37	85	1076	64	659	353	896
Unknown	0	0	0	0	0	18	6	11	1	3
Total	164	16	60	88	253	4468	754	1947	1767	4159

*Please note that this table reflects the number of specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Delays in the reporting of data may cause data to change retrospectively.

Figure 4. Influenza tests reported and percentage of tests positive, Canada, by report week, 2011-2012

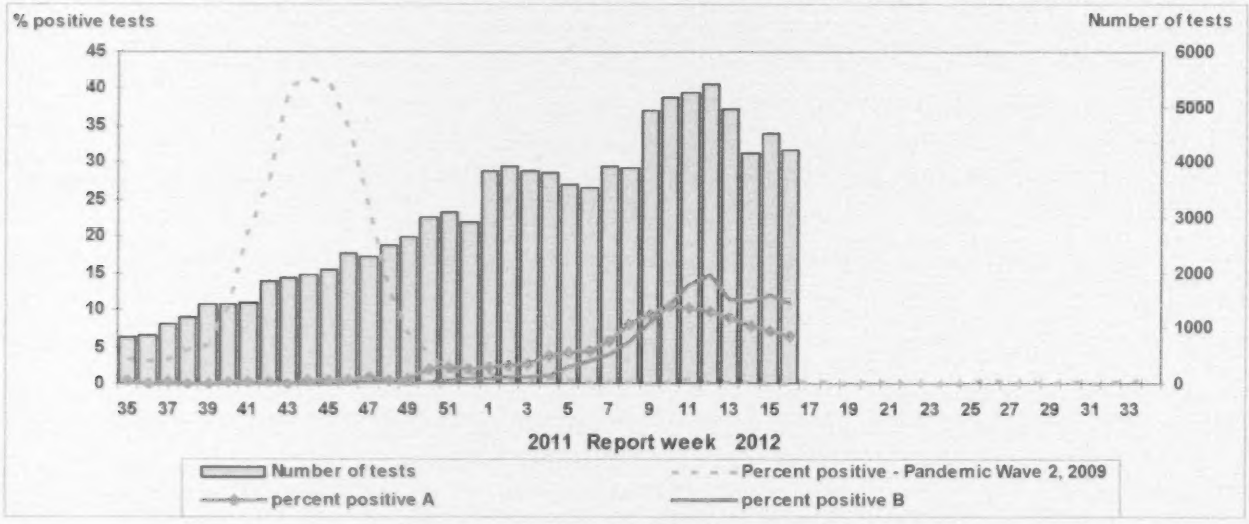
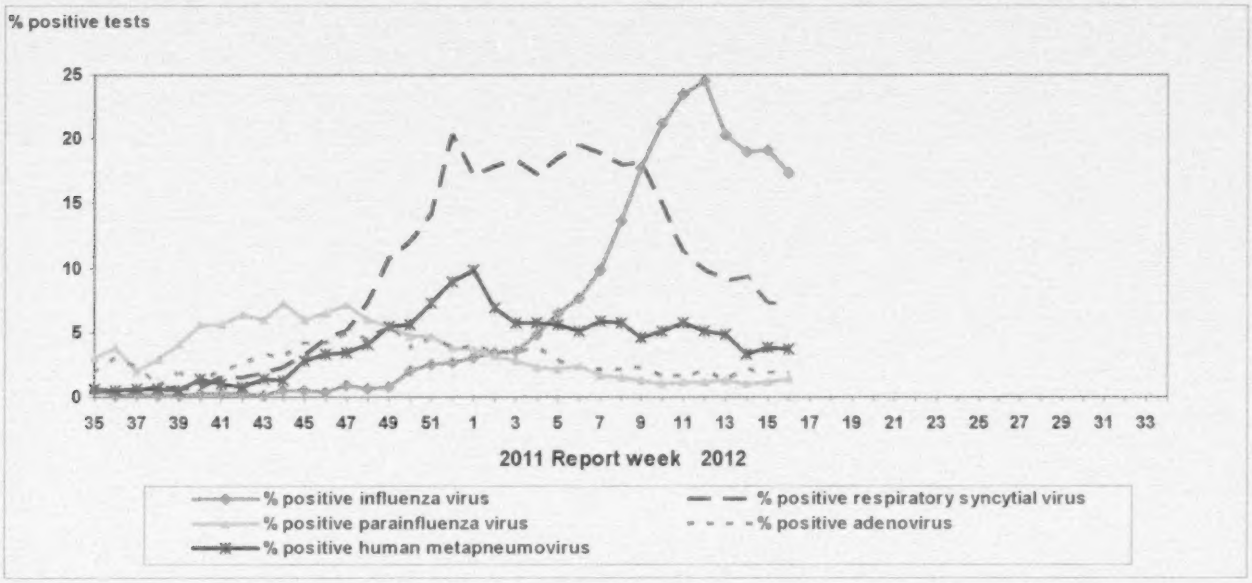


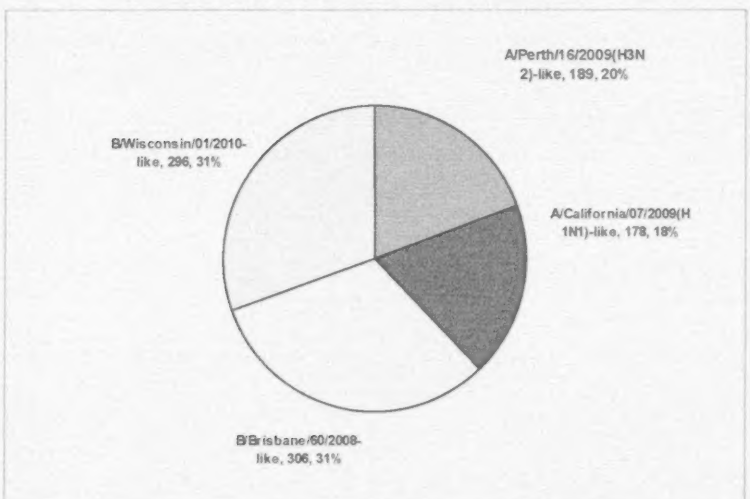
Figure 5. Percent positive influenza tests, compared to other respiratory viruses, Canada, by reporting week, 2011-2012


% positive tests
25
20
15
10
5
0
35 37 39 41 43 45 47 49 51 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33
2011 Report week 2012
% positive influenza virus
% positive parainfluenza virus
% positive human metapneumovirus
% positive respiratory syncytial virus
% positive adenovirus

Influenza Strain Characterizations

Since the start of the season, the National Microbiology Laboratory (NML) has antigenically characterized 969 influenza viruses (189 A/H3N2, 178 A/H1N1 and 602 B). Of the 189 A/H3N2 viruses (from BC, AB, SK, MB, ON, QC, NS & NT), 170 (90.0%) were antigenically similar to A/Perth/16/2009 while 19 (10.0%) viruses showed reduced titers with antiserum produced against A/Perth/16/2009. Of the 178 A/H1N1 viruses characterized (from BC, AB, SK, MB, ON, QC & NB), 173 (97.2%) were antigenically similar to A/California/07/2009 and 5 (2.8%) viruses tested showed reduced titer with antiserum produced against A/California/07/2009. Of the 602 influenza B viruses characterized, 306 (50.8%) (from BC, AB, SK, MB, ON, QC, NB, NS & NL) were antigenically similar to the vaccine strain B/Brisbane/60/2008 (Victoria lineage); however 1 virus out of the 306 tested showed reduced titer with antiserum produced against B/Brisbane/60/2008. The remaining 296 (49.2%) influenza B viruses (from BC, AB, MB, ON, QC, NB, NS & NU) are antigenically related to the reference virus B/Wisconsin/01/2010-like, which belongs to the Yamagata lineage. (Figure 6)

Figure 6. Influenza strain characterizations, Canada, 2011-2012, N = 969



Note: The recommended components for the 2011-2012 Northern Hemisphere influenza vaccine include: A/Perth/16/2009 (H3N2), A/California/7/2009 (H1N1) and B/Brisbane/60/2008.

Antiviral Resistance

Since the beginning of the season, NML has tested 937 influenza viruses for resistance to oseltamivir (by phenotypic assay and/or sequencing) and 936 for zanamivir (by phenotypic assay) and it was found that all viruses tested were susceptible to oseltamivir and zanamivir. A total of 558 influenza A viruses (309 H3N2 and 249 H1N1) were tested for amantadine resistance; all but 1 influenza A(H3N2) virus tested were resistant. (Table 3)

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2011-2012

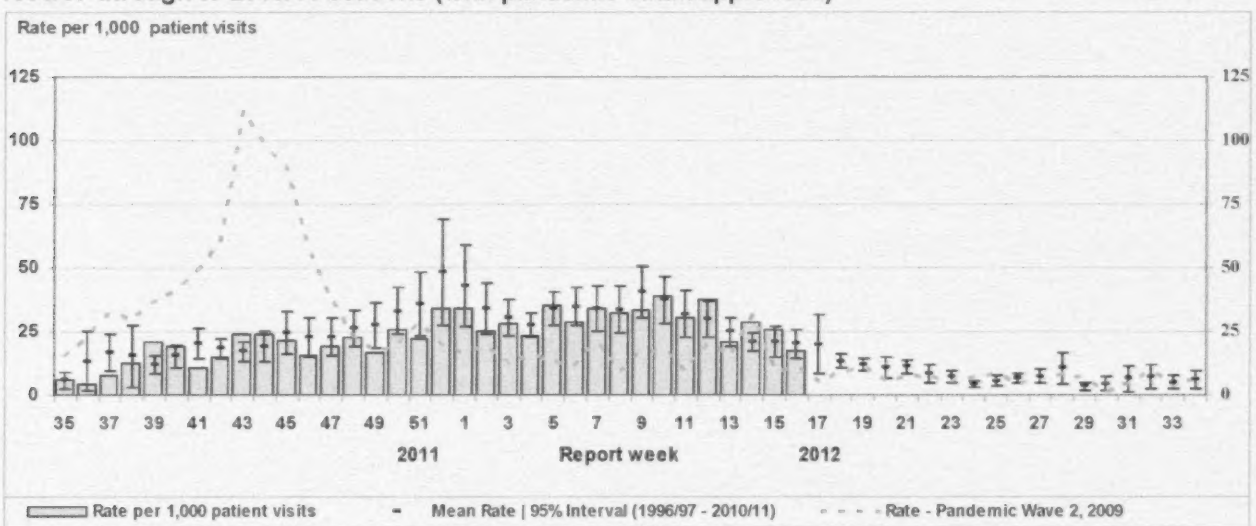
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	182	0	183	0	309	308 (99.7%)
A (H1N1)	190	0	190	0	249	249 (100%)
B	565	0	565	0	NA*	NA*
TOTAL	937	0	938	0	558	557 (99.8%)

* NA – not applicable

Influenza-like Illness (ILI) Consultation Rate

The national ILI consultation rate declined from the previous week (17.5 ILI consultations per 1,000 patient visits in week 16) but remains within the expected levels for this time of year (Figure 7). The highest consultation rates this week were observed children under 5 (41.4/1,000 visits) and in those between 5 to 19 years old (19.2/1,000 visits).

Figure 7. Influenza-like illness (ILI) consultation rates, Canada, by report week, 2011-2012 compared to 1996/97 through to 2010/11 seasons (with pandemic data suppressed)



Note: No data available for mean rate in previous years for weeks 19 to 39 (1996-1997 through 2002-2003 seasons). Delays in the reporting of data may cause data to change retrospectively.

Severe Respiratory Illness Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 16, 18 new laboratory-confirmed influenza-associated paediatric (16 years of age and under) hospitalizations were reported through the Immunization Monitoring Program Active (IMPACT) network. Four hospitalizations were due to influenza A (unsubtyped) (in BC & QC); 1 was due to A(H3N2) (in AB), 1 was due to A(H1N1) (in AB) and 12 were due to influenza B (in AB, ON, QC & NS).

To date this season, 502 influenza-associated paediatric hospitalizations have been reported through IMPACT (from BC, AB, SK, MB, ON, QC, NS & NL); 223 (44.4%) were due to influenza A and 279 (55.6%) were due to influenza B.

The proportion of cases by age group is as follows: 15.1% among infants <6 months of age; 20.9% among children 6-23 months of age; 31.5% were between 2-4 years; 22.1% were between 5-9 years; and 10.4% were between 10-16 years. To date this season, 4 influenza B associated deaths have been reported through the IMPACT network.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associate paediatric hospitalizations in Canada; therefore, the number of hospitalizations included in this report may differ from those reported by other Provincial and Territorial Health Authorities.

Influenza Hospitalizations and Deaths (Aggregate Surveillance System)
In week 16, 123 new laboratory-confirmed influenza-associated hospitalizations were reported of which 35 (28.5%) were in those < 20 years of age and 88 (71.5%) in those ≥ 20 years of age; 24.4% due to influenza A and 75.6% due to influenza B. The hospitalizations were reported in AB (10), MB (5), ON (103), PE (1) and NL (4). Of the 123 hospitalizations, 1 required admission to ICU (MB) and was associated with influenza A(H1N1)pmd09 infection. In addition, there were 5 adult influenza-associated deaths reported (in ON); all 5 deaths were associated with influenza B infection and all cases were ≥ 65 years of age.

To date this season, 1,354 influenza-associated hospitalizations have been reported from 7 provinces (AB, SK, MB, ON, NS, PE & NL) and 2 territories (YT & NT). The largest proportion of cases was observed in those ≥ 65 years of age (32.3%). Influenza B (55.6%) continues to be the predominant influenza type among hospitalized cases compared to influenza A (44.4%); of those influenza A hospitalizations where subtype was available, influenza A(H3N2) predominated (57.9%). There have been 55 hospitalizations requiring ICU admission reported (from AB, SK, MB, NS & NL) of which 29.1% were < 20 years of age and 70.9% were ≥ 20 years of age. To date this season, 76 influenza-associated deaths have been reported (from AB, SK, MB, ON & NS) of which 6.6% were among those < 20 years of age and 93.4% in those ≥ 20 years of age. Of the adult deaths, 78.9% were in those ≥ 65 years of age.

Note: Some of the hospitalizations and deaths reported in those ≤ 16 years of age may also have been reported in the IMPACT summary above if the hospitalization or death occurred in one of the 12 IMPACT hospitals. The reason for hospitalization or cause of death does not have to be attributable to influenza in order to be reported. Influenza-associated hospitalizations are not reported to PHAC by the following Provinces: BC, & QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not reported in ON.

International Influenza Updates

WHO: Overall, influenza activity in the northern hemisphere is decreasing. In some countries, including the United States of America and the United Kingdom, the 2011/2012 season was milder in comparison to previous influenza seasons. In other countries in Europe and northern Asia influenza activity has reached similar levels to previous years. Countries in the tropical South American region have reported low or undetectable levels of influenza transmission in the past few weeks. In Central America and the Caribbean influenza activity also remained low, with the exception of the Dominican Republic, where an increase in influenza A(H3N2) was reported. In the temperate regions of South America and Australia and New Zealand, ILI activity remained low at inter-seasonal levels. *World Health Organization influenza update*

United States: During week 15, influenza activity remained elevated in some areas of the United States, but declined nationally and in most regions. In week 15, 17.5% (653/3,730) of influenza tests were positive of which 81.6% were for influenza A viruses and 18.4% for influenza B. Since October 1, 2011, the CDC characterized 1,219 influenza viruses: 321 A/H1N1, 745 A/H3N2 and 153 B. Of the 321 A/H1N1 viruses characterized, 315 (98.1%) were A/California/7/2009(H1N1)-like and 6 (1.9%) showed reduced titers with antiserum produced against A/California/7/2009. Of the 745 influenza A/H3N2 viruses that were characterized, 606 (81.3%) were A/Perth/16/2009-like and 139 (18.7%) showed reduced titers with antiserum produced against A/Perth/16/2009. Of the 153 influenza B viruses that were characterized, 64 (41.8%) were B/Brisbane/60/2008-like (B/Victoria lineage) and 89 (58.2%) belonged to the B/Yamagata lineage. The proportion of outpatient visits for ILI was 1.5%, which is below the national baseline. Widespread influenza activity was reported in 6 states, 9 states reported regional influenza activity, 17 states reported localized influenza activity, while the rest reported either sporadic or no activity. Two influenza-associated paediatric deaths were reported to CDC in week 15 but occurred in week 13; one was associated with influenza A(H1N1)pdm09 infection and the other with seasonal A(H3) infection. To date this season, 15 influenza associated-pediatric deaths have been reported. *Centers for Disease Control and Prevention seasonal influenza report*

Europe: In week 16, influenza activity continued to decline in the WHO European Region. Influenza A(H3N2) viruses continue to dominate however the proportion of influenza B virus detections increased from the previous week. Of the 538 ILI/ARI samples tested in week 16, 120 (22.3%) tested positive for influenza, of which 48.3% were for influenza A and 51.7% for influenza B. Since week 40, 1,757 influenza viruses have been characterized antigenically: 27 were A/California/7/2009(H1N1)-like; 1,396 were A/Perth/16/2009(H1N1)-like; 2 were A/Brisbane/10/2007 (H3N2)-like; 46 were B/Florida/4/2006-like (B/Yamagata/16/88 lineage), 45 were B/Bangladesh/3333/2007-like (B/Yamagata/16/88 lineage) and 241 were B/Brisbane/60/2008-like (B/Victoria/2/87 lineage). *EuroFlu weekly electronic bulletin*

Human Avian Influenza Updates

No new cases of human A/H5N1 avian influenza infection have been reported by the WHO since April 12, 2012. *WHO Avian influenza situation updates*

FluWatch reports include data and information from the following sources: laboratory reports of positive influenza tests in Canada (National Microbiology Laboratory), sentinel physician reporting of influenza-like illness (ILI), provincial/territorial assessment of influenza activity based on various indicators, including laboratory surveillance, ILI reporting, and outbreaks, influenza-associated paediatric and adult hospitalizations, antiviral sales in Canada, and WHO and other international reports of influenza activity.

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

ILI definition for the 2011-2012 season

ILI in the general population: Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

Definitions of ILI/Influenza outbreaks for the 2011-2012 season

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. workplace, closed communities.

Influenza Activity Levels Definition for the 2011-2012 season

Influenza Regional Activity levels are defined as:

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html. Ce rapport est disponible dans les deux langues officielles. Pour en recevoir un exemplaire dans l'autre langue chaque semaine, veuillez communiquer avec Estelle Arseneault, Division de l'immunisation et des infections respiratoires au (613) 998-8862.